

## THE ANYSTID MITES OF AUSTRALIA

By H. WOMERSLEY, A.L.S., F.R.E.S., South Australian Museum

[Read 10 April 1942]

## Family ANYSTIDAE Oudemans, 1902

Reddish to yellowish, soft-bodied, long-legged, free-living predaceous mites. Body short and broad, and somewhat triangular (subfamily *Anystinae*) or elongate-elliptical (subfamily *Erythracarinae*). Cuticle soft and finely striated. Eyes, one or two on each side, generally strongly pigmented. No transverse suture between propodo- and hysterosoma. Palpi 5-segmented; tibia with a series of stout apical spines; tarsus situated ventrally, long and slender. Mandibles club-shaped with hook-like apical chela. Peritremata horn-like arising from the base of the mandibles; arms free or not. Dorsally usually with an anterior median shield formed by absence of cuticular striations, or by striations running in a different direction; sometimes absent. Dorsal setae long, thick and coarsely, strongly ciliated, frequently on small islands or plates of non-striated cuticle; in transverse rows of 2, 4, or 6. In front of the propodosoma is a hemispherical projection (anterior sensillary area of crista of Oudemans) bearing a pair of fine sensory setae. The dorsal shield carries a second pair of sensory setae and two pairs of normal setae.

Legs long and slender with long ciliated, and some sensory, setae; tarsi with paired claws (ciliated) and a more or less bell-shaped empodium, or claws toothed on inner margins, empodium claw-like or as a ciliated pad-like pulvillus. Tarsi sometimes subdivided. Coxae in four pairs or all adjacent.

Ventrally are the large genital and anal openings, with or without a small round plate anterior of the genital opening. The setae around the genital and anal opening are of generic importance, often being arranged on small plates, either singly or in twos.

Little is known of the life-history beyond the larvae and nymphs of some species of *Anystinae*.

The family is divided by Oudemans into two well-defined subfamilies, the *Anystinae* and the *Erythracarinae*.

## ANYSTINAE Oudemans 1906

Arch. f. Naturgesch., 5, (3), 383, 1936.

Short and broad; two eyes on each side, situated comparatively well behind. Anterior sensillary area and paired sensillae present. Median dorsal shield wider than long with paired antero-median sensillae and four normal setae. Peritremata horn-like with free ends. Palpi: tibia with three stout apical spines (one on larva), tarsus long. Dorsal setae in rows of four often arising from small areas (? shields) devoid of striations, long, strong and coarsely ciliated. Coxae all adjacent, I and II with supracoaxal seta. Upper surface of legs smooth; the free segments with sparse sensory setae, short, smooth, adpressed setae and long ciliated outstanding setae. Basi- and telofemur always separated. Tibia longer than tarsi and considerably thinner than genu; tarsi short, somewhat laterally compressed, often arched. Claws smooth, finely striated. Empodium in larvae claw-like, twice bent; in nymph I claw-like only on leg IV, on leg I to III bell-shaped; in all other instars and on all legs bell-shaped.

Ventrally; labium with 8-12 pairs of fine setae. Between coxae III and IV a median round shield. On each side of the genital opening two very small shields, with a single long or special setae, or on each side only one shield with two setae. Also on each side of uropore three or four very small shields with single setae.

The male is characterised by conical distally clavate setae on the palpal tarsi and by the ciliated anal setae.

#### KEY TO THE GENERA OF ANYSTINAE

- 1 Without a median dorsal shield. In the position of the shield with 2 sensory setae and 4 normal setae. Dorsal setae 4, 6, 6, 4, 2. Small shields near genital opening with only a single seta. 2  
Gen. *Tencatcia* Ouds. 1936  
 With a median dorsal shield.
- 2 Median shield with entire transverse striations, with 2 sensory and 4 normal setae. Dorsal setae 4, 4, 4. Small shields near genital opening with only a single seta. 3  
Gen. *Walzia* Ouds. 1936  
 Median shield with short transverse striations along the midline, otherwise as above.  
Gen. *Snartia* Ouds. 1936
- 3 Median dorsal shield entirely without striations or with finely punctured reticulations. 3  
 Small shields near genital opening with only single setae. Median dorsal shield more than twice as wide as long. 3  
Gen. *Anystis* von Heyden 1826  
 Small shields near genital opening with paired setae. Median dorsal shield relatively not so wide as long.  
Gen. *Scharfenbergia* Ouds. 1936

N.B.—Oudemans (1936) also erects the genus *Autcnriethia* for *Actineda velox* Berl. 1905 from India, and *Barellea* for *Anystis sinensis* Berl. 1923 from China. The data given, however, does not permit them to be keyed here.

#### Genus ANYSTIS von Heyden 1826

##### ANYSTIS BACCARUM (Linn. 1758)

In his monographic revision of the family Anystidae (Arch. f. Naturgesch., 1936, Bd. 5, Hft. 3, 364-346) Oudemans questions my record of this species from Western Australia, Victoria, New South Wales and South Australia (Trans. Roy. Soc. S. Aust., 1933, 57, 111). I must admit that at that time one did not recognise the minute details now used by Oudemans for the separation of genera and species of this family. In consequence, in working up new material I have taken the opportunity to re-examine my older mounts more critically. The result is that I can now affirm that all my old records are definitely of *A. baccharum* as understood by Oudemans. From this material I herewith give sufficient figured details to show that this is so.

Unfortunately, however, Oudemans does not satisfactorily point out the specific differences in the species of *Anystis* nor does he key the species. While some of his species are valid, others seem to be very little if at all different from *baccharum*.

He does not describe the male of this species, but of the genus states that the males are distinguished by the conical distally clavate setae on the dorsal side of the palpi, and mostly by the ciliated setae in the neighbourhood of the genital opening. I give, therefore, a figure of the genital and anal openings, in which it will be seen that the ciliated setae are associated with the anal and not the genital opening (fig. D).

The following dimensions are from a male and a female specimen, respectively, from Buckland Park, South Australia. The female was gravid.

Length ♂ 990  $\mu$ , ♀ 910  $\mu$ ; width 1,040  $\mu$ , 1,083  $\mu$ . Length of palpi 400  $\mu$ , 480  $\mu$ . Length of mandibles 290  $\mu$ , 290  $\mu$ . Anterior sensillary setae 113  $\mu$ , 121  $\mu$ . Posterior sensillary setae 135  $\mu$ , 148  $\mu$ . Scutal setae 243  $\mu$ , 243  $\mu$ . Dorsal setae 240  $\mu$ , 240  $\mu$ . Width of median dorsal scutum 370  $\mu$ , 370  $\mu$ ; depth 103  $\mu$ , 103  $\mu$ . Legs I 1,120  $\mu$ , 1,040  $\mu$ ; II 1,520  $\mu$ , 1,120  $\mu$ ; III 1,390  $\mu$ , 1,040  $\mu$ ; IV 1,120  $\mu$ , 1,040  $\mu$ . Tarsus  $1\frac{3}{4}$  length of metatarsus in both sexes.

*Localities*—Western Australia: Waroona, August 1931; Mullewa, September 1931. New South Wales: Five Islands, July 1938. Victoria: Dan-

denongs, 1931; Burnley, 1938. South Australia: Urrbrae, May 1930; Buckland Park, August 1933; Waterfall Gully, May 1938; Humbug Scrub, October 1938; Bridgewater, February 1939; Victor Harbour, May 1939.

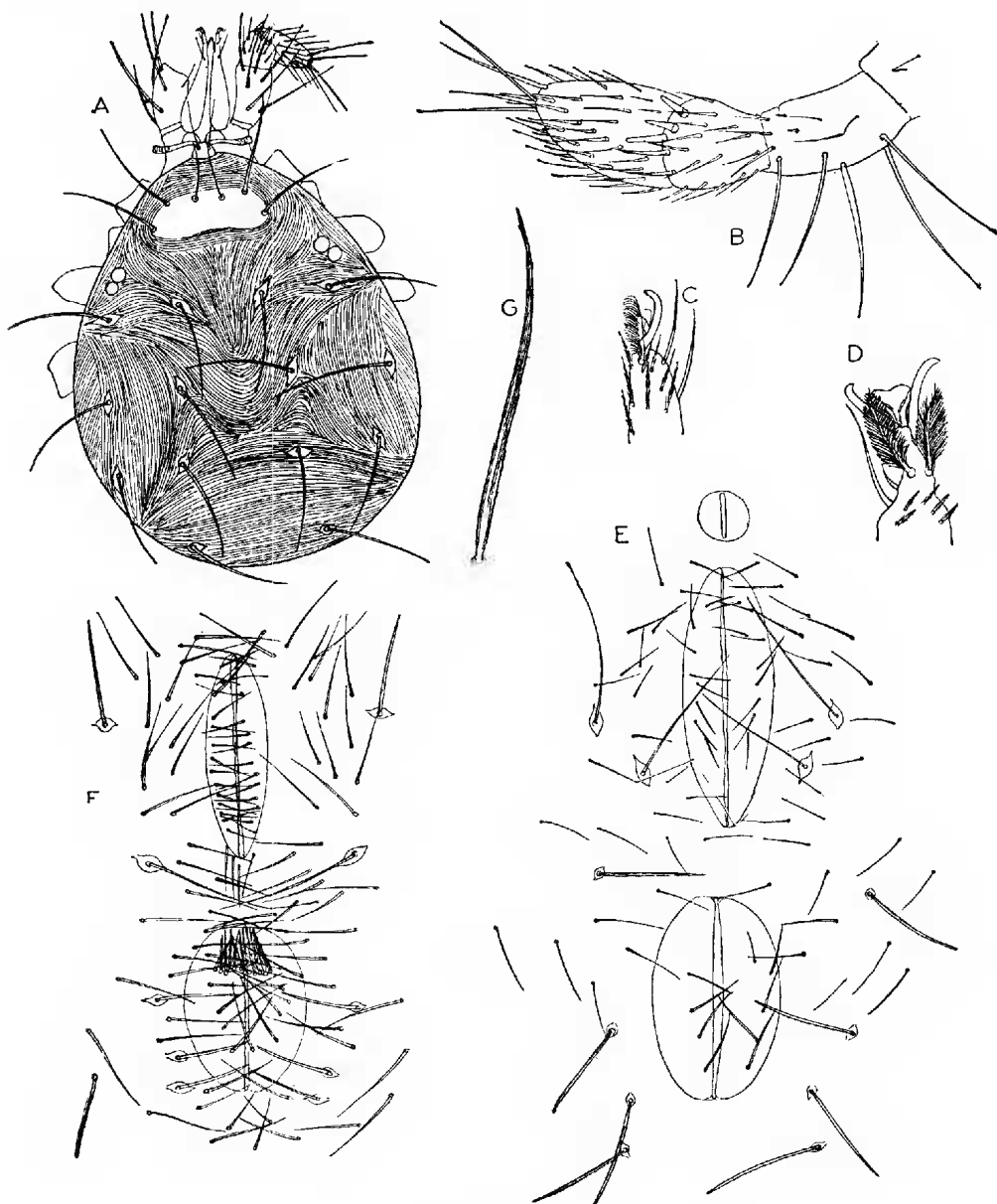


Fig. 1 A—F

*Anystis baccarum* (L.)—A, dorsal view of ♀; B, palp of ♂; C, tip of tarsus from side; D, same from below; E, genital and anal opening of ♀; F, same of ♂.

Gen. WALZIA Oudemans 1936

Arch. f. Naturgesch., 5, (3), 419.

As in *Anystis*, but the position of the median dorsal shield with fine horizontal striations. Type species, *W. antiguensis* (Stoll. 1886) Ouds., 1936.

**Walzia australica** n. sp

*Description*—*Female*: Length 880  $\mu$ , width 800  $\mu$ , when gravid 720  $\mu$  long by 850  $\mu$  wide. Palpi as figured 380  $\mu$  long, apex of tibia with three long and one small, stout spines. Mandibles 230  $\mu$  long. Median dorsal scute 310  $\mu$  wide, 108  $\mu$  long, with horizontal fine striations, with a median pair of sensory setae and two pairs of normal setae. Anterior sensory setae 108  $\mu$  long, posterior 135  $\mu$ , ciliated for about the distal three-fourths. Dorsal setae on small plates, 216  $\mu$  long, ciliated, arranged 4, 4, 4, 4. Legs I 1,280  $\mu$ , II 1,360  $\mu$ , III 1,200  $\mu$ , IV 1,300  $\mu$ ; tarsus I 216  $\mu$ , metatarsus I 304  $\mu$ ; with numerous adpressed setae, and long outstanding ciliated setae; claws and empodium as figured. Venter: Genital and anal openings as figured. *Male*: Length 640  $\mu$ , width 590  $\mu$ . Palpi as figured,

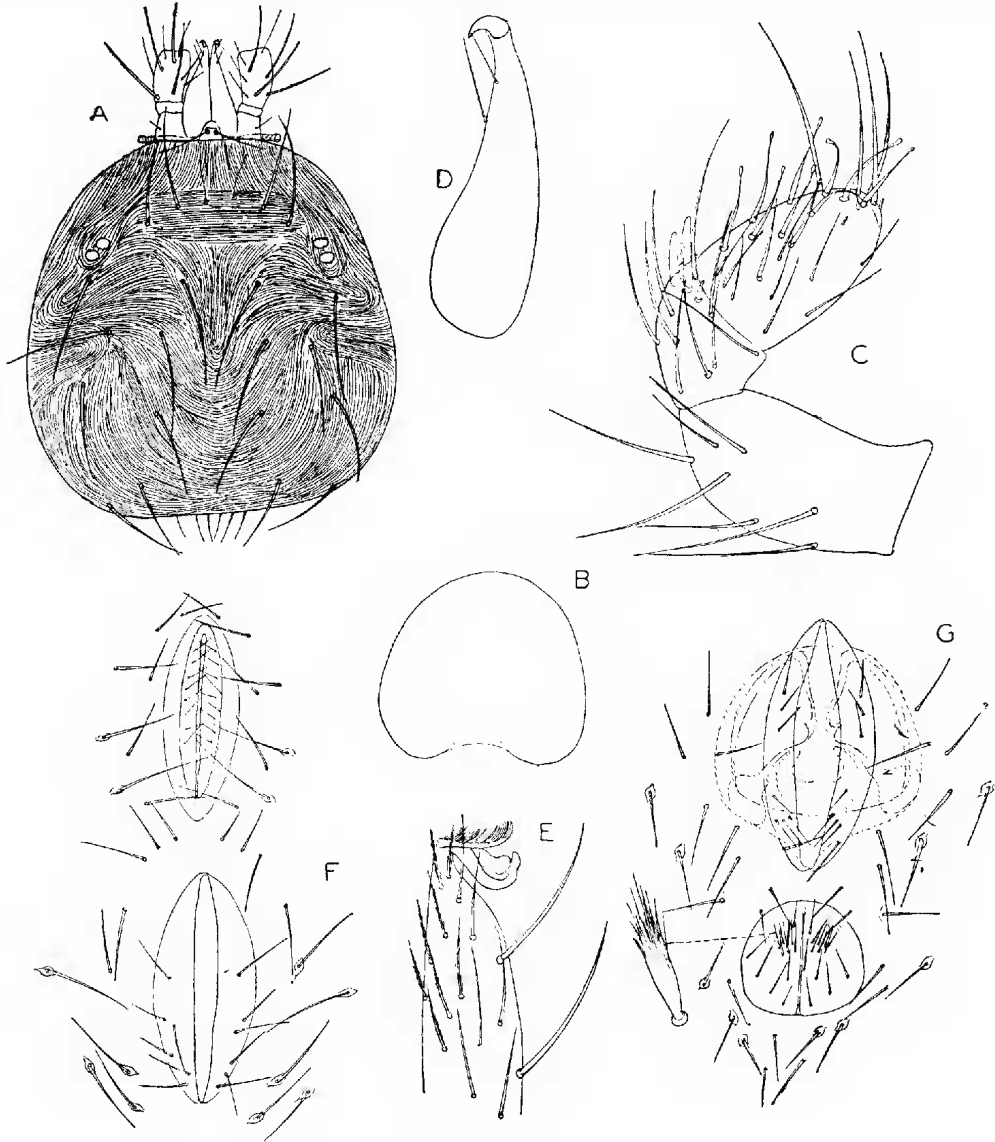


Fig. 2 A—G

**Walzia australica** n. sp.—A, dorsal view of ♀; B, outline of gravid ♀; C, palpus of ♂; D, mandible; E, tip of tarsus from side; F, genital and anal openings of ♀; G, same of ♂.

with dorsally numerous conical and apically clavate setae. Mandibles 220  $\mu$  long. Median dorsal scute as in female 324  $\mu$  wide by 120  $\mu$  long; scutal setae 243  $\mu$ . Anterior sensory setae 108  $\mu$ , posterior 121  $\mu$ . Legs I 960  $\mu$ , II 1,040  $\mu$ , III 880  $\mu$ , IV 930  $\mu$ ; tarsus I 150  $\mu$ , metatarsus I 255  $\mu$ . Dorsal setae on small plates as in female. Venter: Genital and anal openings as figured; anal opening anteriorly with a cluster of specialised setae.

*Localities*—South Australia: Port McDonnell, January 1941, four  $\delta$ , two  $\phi$ , on ti-tree (J. S. W.). Queensland: Nurimbah, April 1935,  $\phi$  (A. R. B.); Mount Cotton, Brisbane, on *Jacksonia*, 3 September 1941, two  $\phi$ ; Redland Bay, on *Leptospermum*, 3 September 1941, one  $\delta$ , one  $\phi$  (A. R. B.).

*Remarks*—This species may possibly be identical with the genotype *Walzia antiquensis* (Stoll, 1886), but it seems advisable at present, on account of the localities, to regard it as distinct. There are, however, no essential specific differences observable.

#### Subfamily ERYTHRACARINAE Oudemans 1936

Archiv. f. Naturgesch., 5, (3), 427, 1936.

Mostly elongate, two or four eyes situated well forward. Peritremata mostly fused with the front edge of the epistoma. On the front of the idiosoma with or without a sensillary area, with two sensillary setae; behind these again a second pair of sensillary setae, which, if a median dorsal shield is present, are situated thereon. Median dorsal shield present or absent. Dorsal setae behind shield in transverse rows of 2, 4 or 6. Mandibles short, longitudinally striate.

Palpal tibia with two ciliated claws, or only one smooth claw. Legs with short adpressed and long outstanding setae, both ciliated, in addition to some sparse sensory setae. Tibiae in the 2-eyed genera longer, in the 4-eyed shorter than the tarsi. Tarsi cylindrical, undivided or divided into two or many parts. Empodium claw- or brush-like. Coxae conjoined or free. No small shield between coxae III and IV. Near genital and anal openings no setae on small plates. Male with specialised setae in a cluster associated with anal opening. Uropore terminal.

The subfamily is divided by Oudemans (*loc. cit.*, 428) into the following groups of genera:

Group A Scapular row of setae with 4, the other rows with only 2. Peritremata not chambered. Anterior sensillary area present. Palpi long and slender, femur and genu fused. Empodium a short thick, ciliated claw.

Genera *Erythracarus*, *Schellenbergia*, *Bechstaenia*

Group B Dorsal setae in transverse row of 4 or more. Peritremata chambered, built into the front edge of epistoma, their ends not free. No anterior sensillary area. Mandible with two setae, posterior needle-like and outstanding. Palpi short and thick, femur and genu separated. Basi- and telofemur of legs separated; their setae forming a crown. Tarsi subdivided into from 7 to 18 parts. All four pairs of coxae separated; their posterior margins indistinct.

Genera *Tarsotomus*, *Tarsolarcus*

Group C Dorsum strongly haired. Propodosoma with large round shield, which is only haired on the edge. No anterior sensillary area. Two eyes on each side. Palpi short and thick. Basi- and telofemur of legs with crown of setae. Coxal pairs touching.

Genus *Anandia*

Group D Short, rounded, quite quadrangular. Gnathosoma very short. Palpi short.

Genus *Siblyia*

Group E Only two eyes. Palpal tibia with only one claw.

Genus *Chabricia*

As yet only the genera *Erythracarus* Berl. 1903, and *Schellenbergia* Ouds. 1936, are known from Australia.

## Genus SCHELLENBERGIA Oudemans 1936

Archiv. f. Naturgesch., 5, (3), 433, 1936.

One eye on each side. Median dorsal shield broader than long. Dorsal setae on small shields. Peritremata  $\sim$ -shaped; distally broadened and the ends free. Anterior sensory arca present, with terminal knob. Mandibles with two setae. All legs with basi- and telofemur ankylosed. Tarsus shorter than tibia with long basal part and short distal part. All coxae adjacent.

Type *Erythraeus domesticus* C. L. Koch 1847

**Schellenbergia warregense** (Hirst 1931) n. comb.

P.Z.S., 562, as *Tarsotomus warregense*; Oudemans. 1936 (*loc. cit.*), 442.

Oudemans (*loc. cit.*) places this species amongst a list of uncertain and inadequately described species of *Tarsotomus*. He queries Hirst's reference to the sexes, in which the female is said to have a comb of specialised setae around the genital opening. Oudemans correctly considers that this sex is the male.

As the type material of this species has been deposited by Prof. T. Harvey Johnston in the South Australian Museum, it is now possible to place the species in Oudemans's new genus *Schellenbergia*. As Hirst's paper was published posthumously after an unsuccessful search for his drawings, detailed figures drawn from the type material are now given together with a more detailed and adequate description.

*Description*—*Male*: Length ca. 1,120  $\mu$ , width ca. 720  $\mu$ ; elongate. Eyes 1 + 1. Dorsal scute large, wider than long, approximately 310  $\mu$  by 162  $\mu$ ; outline approximately as in figure. Anterior sensillary area present, with anterior knob and a pair of sensory setae 190  $\mu$  long. Posterior sensory setae missing. Palpi 480  $\mu$  long, tibiae with two unequal shortly and coarsely ciliated claws at apex, tarsi long. Mandibles 160  $\mu$  long, with a short simple subapical seta, and a long straight outstanding ciliated posterior seta. Scutal setae 216  $\mu$ . Dorsal setae 220  $\mu$ , arranged 4, 2, 2, plus. Legs I 1,200  $\mu$ , II 1,320  $\mu$ , III 1,120  $\mu$ , IV 1,680  $\mu$ ; tarsus I subdivided into basitarsus 216  $\mu$  long and telotarsus 81  $\mu$ ; metatarsus I 300  $\mu$ . Genital opening with a complicated brush of specialised ciliated setae as figured. Dorsal setae strongly and coarsely ciliated as are the leg setae, especially the outstanding ones. Claws and empodium as figured. *Female*: Length 800  $\mu$ , width 560  $\mu$ . Dorsal scute 320  $\mu$  wide by 128  $\mu$  long. Dorsal setae to 240  $\mu$ . Sensory setae, both anterior and posterior, missing. Genital opening as figured. Otherwise as in male.

*Locality*—The type material in the South Australian Museum consists of one  $\delta$ , two  $\text{♀}$  from Barrington, New South Wales, August 1927 (coll. S. Hirst) and one  $\text{♀}$  from Bourke, New South Wales, August 1927 (coll. S. Hirst). The  $\delta$  is the holotype, and the  $\text{♀}$  from Bourke the allotype.

## Genus ERYTHRACARUS Berl, 1903

Eyes 2 + 2. Median dorsal shield longer than wide. Dorsal setae on small shields. Peritremata quite straight; their ends free. Anterior sensillary area with ventral point. Mandible with a distal seta only. Basi- and telofemur of all legs dorsally ankylosed. Tarsi longer than tibiae and not subdivided. All coxal pairs adjacent. Genital opening of male with clavate setae.

Type *Trombidium parietinum* Herm. 1804

## ERYTHRACARUS ? PARIETINUM (Herm. 1804)

*Trombidium parietinum* Herm. 1804.

*Erythracarus parietinum* Ouds. 1936. Archiv. f. Naturgesch., 5, (3), 429.

A single specimen from under *Eucalyptus* bark, Bathurst, New South Wales, 30 December 1937 (S. L. A.).

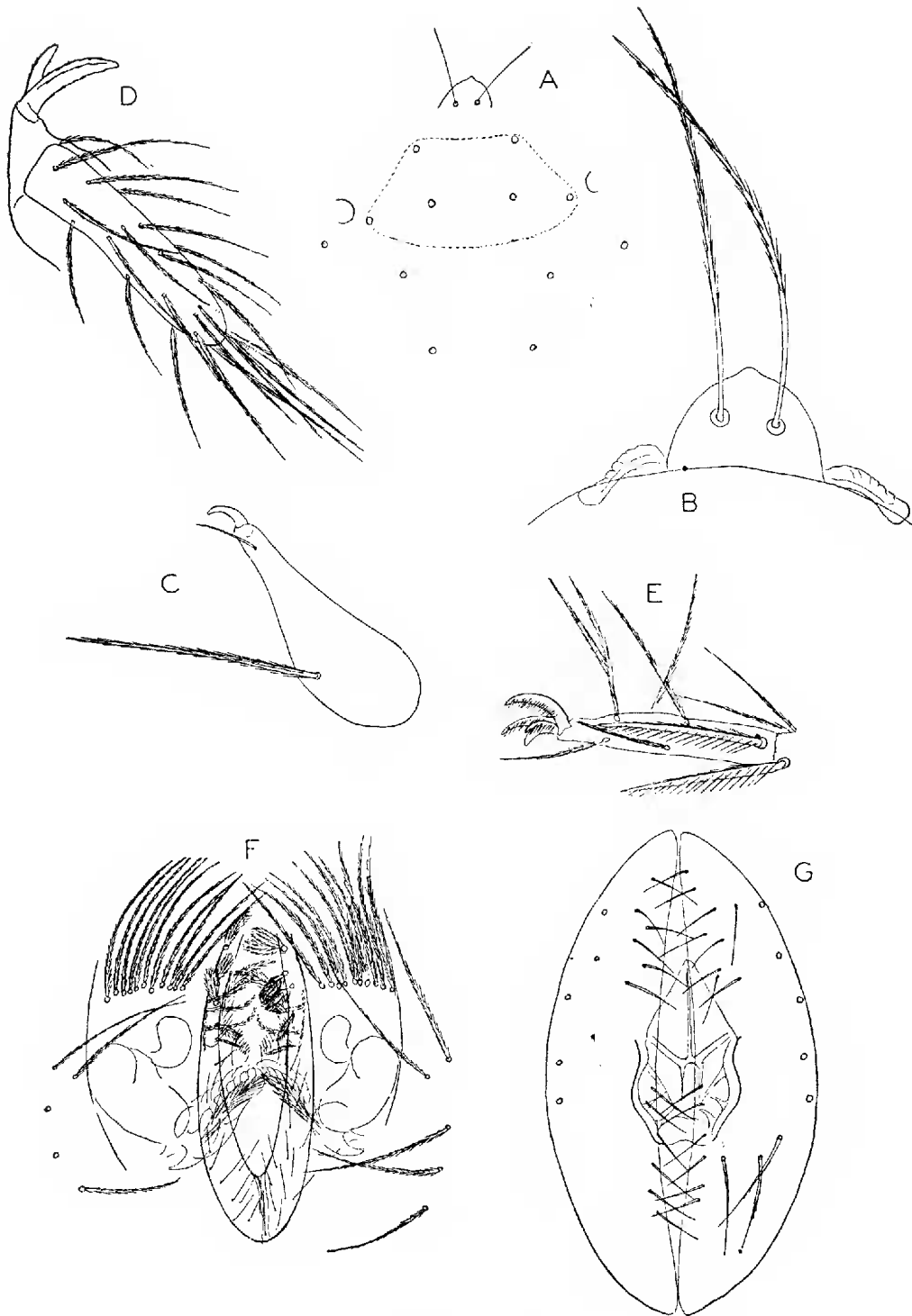


Fig. 3 A—G

*Schellenbergia warregense* (Hirst)—A, anterior portion of dorsum; B, anterior sensillary area and peritremata; C, mandible; D, tip of palpal tibia and tarsus; E, tarsus of leg II; F, genital opening of ♂; G, same of ♀.

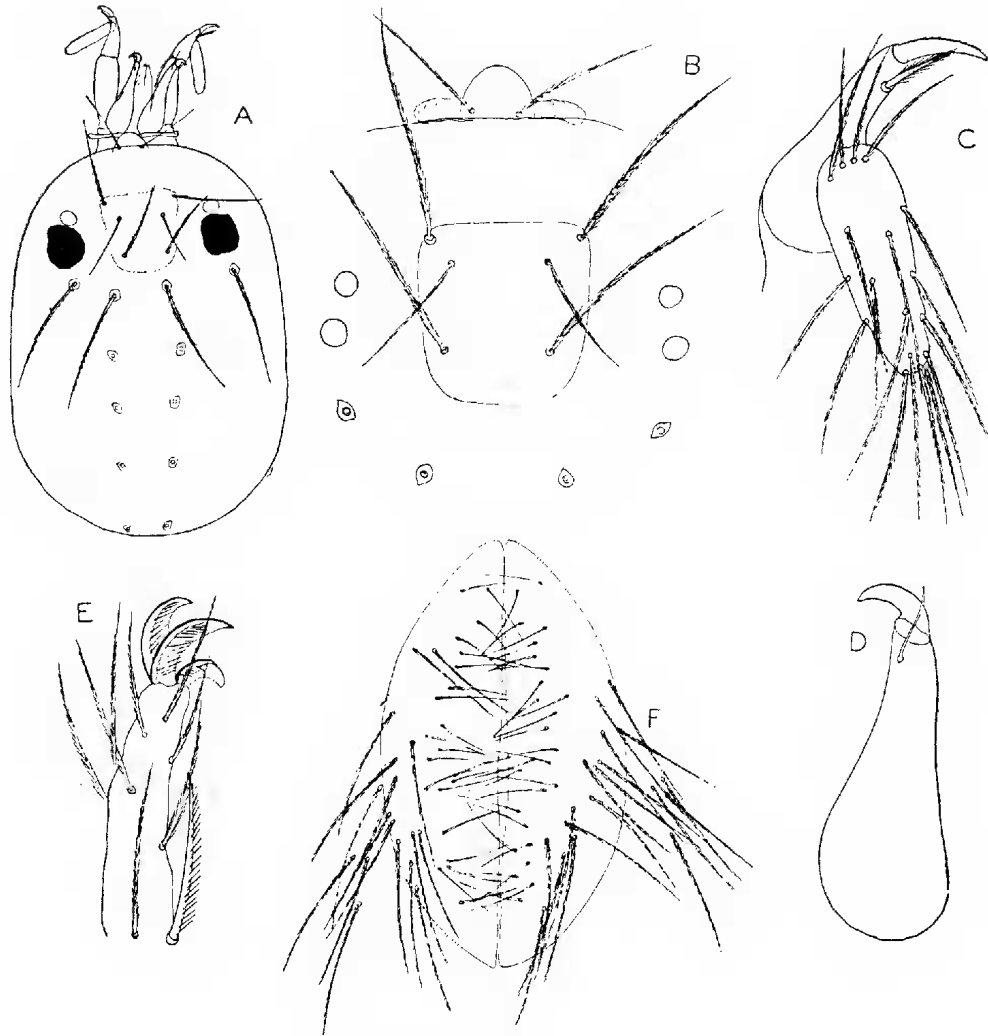


Fig. 4 A—F

*Erythracarus ? parietinum* (Herm.)—A, dorsum; B, anterior portion of dorsum enlarged; C, tip of palpal tibia and tarsus; D, mandible; E, tip of tarsus; F, genital aperture of ♀.

*Description—Female:* Length 720  $\mu$ , width 480  $\mu$ . Eyes ? 2 + 2, one very distinct, behind which is a large dense pigment mass possibly obscuring a second eye on each side. Palpi 290  $\mu$  long, tibial claw and tarsus as figured. Mandibles short, thick, 190  $\mu$  long, basally with only a single distal seta. Median anterior dorsal shield as figured, slightly longer than wide, and widest anteriorly, 100  $\mu$  wide, 110  $\mu$  long, with two pairs of ordinary setae, and a pair of sensillary setae. Anterior sensillary area present with a pair of sensory setae, 108  $\mu$  long, and ciliated their entire length. Dorsal setae strongly ciliated, arranged 4, 2, 2, 2, on small plates. Legs relatively short, I 720  $\mu$ , II 820  $\mu$ , III 800  $\mu$ , IV 880  $\mu$ ; tarsus I 200  $\mu$ , not subdivided, metatarsus I 135  $\mu$ ; all legs with short adpressed, and long outstanding setae; tarsi with paired ciliated claws, and claw-like ciliated empodium. All coxae adjacent. Genital opening as figured.

*Remarks—*Although the preparation of this single specimen is not very good, it appears to be *E. parietinum* (Herm.) as described and figured by Oudemans 1936, except that the size is very much smaller. Oudemans gives the size as: length 1,175  $\mu$ , width 575  $\mu$ .